

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/AU2005/000035

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> Int. Cl. <sup>7</sup> : G01N 21/35, G01J 3/42, 3/45, G08G 5/04 According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) <ul style="list-style-type: none"> <li>DWPI; SO<sub>2</sub> OR SULPHUR DIOXIDE; WATER OR H<sub>2</sub>O OR CLOUD? OR MOISTURE OR HUMIDITY; DETECT+ OR IMAG+ OR SENS+ OR DISTINGUISH+ OR IDENTIF+OR G01N-021/IC; INFRARED OR IR OR TIR; TERRESTRIAL OR AIRBORNE OR AHEAD OR SKY OR "GROUND BASED", SUBTRACT+ OR COMPENSAT+ OR CORRECT+ OR DISCRIMINAT+ OR ELIMINAT+; SPECTR+, +BAND+ OR WAVENUMBER? OR WAVELENGTH? OR ABSORPTION OR EMISSION OR FEATURE? OR SIGNATURE? OR LINE? OR FREQUENC+ OR FILTER+ OR +CHANNEL? OR MULTISPECTR+ and similar keywords</li> <li>Google Scholar: SULPHUR DIOXIDE; WATER; DETECT; THERMAL INFRARED and similar combinations of keywords</li> </ul>		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PRATA A. J., ROSE W.I., SELF S. and O'BRIEN D.M., Global, Long-Term Sulphur Dioxide Measurements From TOVS Data: A New Tool for Studying Explosive Volcanism and Climate, <i>Volcanism and the Earth's Atmosphere</i> , Alan Robock, Clive Oppenheimer, editors; Geophysical Monograph 139, ISBN 0-87590-998-1; Copyright 2003 by the American Geophysical Union; pages 75-92, see in particular Figure 1 and its description; section 3, including subsections 3.3-3.4	1-20
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C <input checked="" type="checkbox"/> See patent family annex		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family	
Date of the actual completion of the international search 22 March 2005		Date of mailing of the international search report 30 MAR 2005
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. (02) 6285 3929		Authorized officer GREG POWELL Telephone No : (02) 6283 2308

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/AU2005/000035**

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member			
US	5654700	AU	76657/91	CA	2079812
		HK	1002938	SG	46261
		WO	9115739	EP	0525007
US	3805074	US	5602543	FR	2212927
		CA	1011129	DE	2362935
JP	60011122	JP	49099082		
EP	0087077	DE	3206427	JP	58156837
US	6822236	US	6750453		
Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.					
END OF ANNEX					

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/AU2005/000035

C (Continuation).

DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5654700 A (PRATA et al.) 5 August 1997 The whole document and in particular the paragraph bridging columns 4 and 5, Figure 5, Claims 10 and 17	1-20
P, X	WATSON I.M., REALMUTO V.J., ROSE W.L., PRATA A.J., BLUTH G.J.S., GU Y., BADER C.E., YU T., Thermal infrared remote sensing of volcanic emissions using the moderate resolution imaging spectroradiometer, <i>Journal of Volcanology and Geothermal Research</i> 135 (2004) pages 75-89, (available online from 18 May 2004); see Figure 1(D) and Table 1 (channels 28 and 29)	1-20
A	PUGNAGHI S., TEGGI S., CORRADINI S., BUONGIORNO M.F., MERUCCI L., BOGLIOLO M.P., Estimation of SO <sub>2</sub> abundance in the eruption plume of Mt. Etna using two MIVIS thermal infrared channels: a case study from the Sicily-1997 Campaign, <i>Bull Volcanol</i> (2002) 64, pages 328-337, see abstract	
A	US 3805074 A (MCCORMACK) 16 April 1974 Abstract, columns 5-6	
A	Patents Abstracts of Japan JP 60-011122 A (SHIMADZU CORP) 21 January 1985 Abstract	
A	Derwent Abstract Accession No 83-754335/36, Class S03, EP 0087077 A (SIEMENS AG) 31 August 1983 Abstract	
P, A	US 6822236 B1 (NELSON et al.) 23 November 2004 Abstract, Column 5, lines 12-21 and entire Column 8	

## PCT REQUEST

Original (for SUBMISSION )

<b>0</b>	<b>For receiving Office use only</b>	
<b>0-1</b>	International Application No.	
<b>0-2</b>	International Filing Date	
<b>0-3</b>	Name of receiving Office and "PCT International Application"	
<b>0-4</b>	<b>Form PCT/RO/101 PCT Request</b>	
<b>0-4-1</b>	Prepared Using	PCT-SAFE [EASY mode] Version 3.50 (Build 0002.163)
<b>0-5</b>	<b>Petition</b> The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty	
<b>0-6</b>	<b>Receiving Office (specified by the applicant)</b>	Australian Patent Office (RO/AU)
<b>0-7</b>	<b>Applicant's or agent's file reference</b>	FP21044
<b>I</b>	<b>Title of Invention</b>	SULPHUR DIOXIDE DETECTION METHOD
<b>II</b>	<b>Applicant</b>	
<b>II-1</b>	This person is	applicant only
<b>II-2</b>	Applicant for	all designated States except US
<b>II-4</b>	Name	COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION
<b>II-5</b>	Address	Limestone Avenue CAMPBELL, Australian Capital Territory 2612 Australia
<b>II-6</b>	State of nationality	AU
<b>II-7</b>	State of residence	AU
<b>III-1</b>	<b>Applicant and/or inventor</b>	
<b>III-1-1</b>	This person is	applicant and inventor
<b>III-1-2</b>	Applicant for	US only
<b>III-1-4</b>	Name (LAST, First)	PRATA, Alfredo Jose
<b>III-1-5</b>	Address	16 Humphries Road MT ELIZA, Victoria 3930 Australia
<b>III-1-6</b>	State of nationality	AU
<b>III-1-7</b>	State of residence	AU


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IV-1	<b>Agent or common representative; or address for correspondence</b> The person identified below is hereby/ has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:	agent	
IV-1-1	Name	GRIFFITH HACK	
IV-1-2	Address	509 St Kilda Road MELBOURNE, Victoria 3004 Australia	
IV-1-3	Telephone No.	+61 3 9243 8300	
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IV-1-5	e-mail	ghmelb@griffithhack.com.au	
V	<b>DESIGNATIONS</b>		
V-1	The filing of this request constitutes under Rule 4.9(a), the designation of all Contracting States bound by the PCT on the international filing date, for the grant of every kind of protection available and, where applicable, for the grant of both regional and national patents.		
VI-1	<b>Priority claim of earlier national application</b>		
VI-1-1	Filing date	16 January 2004 (16.01.2004)	
VI-1-2	Number	2004900213	
VI-1-3	Country	AU	
VI-2	<b>Priority document request</b> The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) identified above as item(s):	VI-1	
VII-1	<b>International Searching Authority Chosen</b>	Australian Patent Office (ISA/AU)	
VIII	<b>Declarations</b>	Number of declarations	
VIII-1	Declaration as to the identity of the inventor	-	
VIII-2	Declaration as to the applicant's entitlement, as at the international filing date, to apply for and be granted a patent	-	
VIII-3	Declaration as to the applicant's entitlement, as at the international filing date, to claim the priority of the earlier application	-	
VIII-4	Declaration of inventorship (only for the purposes of the designation of the United States of America)	-	
VIII-5	Declaration as to non-prejudicial disclosures or exceptions to lack of novelty	-	

**PCT REQUEST**

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IX	Check list	number of sheets	electronic file(s) attached
IX-1	Request (including declaration sheets)	3	✓
IX-2	Description	12	-
IX-3	Claims	3	-
IX-4	Abstract	1	✓
IX-5	Drawings	4	-
IX-7	TOTAL	23	
	Accompanying Items	paper document(s) attached	electronic file(s) attached
IX-8	Fee calculation sheet	✓	-
IX-17	PCT-SAFE physical media	-	✓
IX-19	Figure of the drawings which should accompany the abstract	1	
IX-20	Language of filing of the International application	English	
X-1	Signature of applicant, agent or common representative		
X-1-1	Name	GRIFFITH HACK	
X-1-2	Name of signatory	Nicholas George Mountford	
X-1-3	Capacity	Principal	

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10-1	Date of actual receipt of the purported international application	
10-2	Drawings:	
10-2-1	Received	
10-2-2	Not received	
10-3	Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application	
10-4	Date of timely receipt of the required corrections under PCT Article 11(2)	
10-5	International Searching Authority	ISA/AU
10-6	Transmittal of search copy delayed until search fee is paid	

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11-1	Date of receipt of the record copy by the International Bureau	
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